

REMARKS

The specification has been amended to correct typographic and editorial errors. In addition, a reference to the appropriate figure has been included in paragraph [0107], which figure is apparent from the description as filed. Numbering of paragraphs [0107]-[0112] has also been corrected in view of the duplication of original paragraph [0106]. No new matter has been included. Entry is respectfully requested.

Claims 1-23, 53-79 and 89-100 have been withdrawn pursuant to the restriction requirement. Withdrawal of these claims is not to be taken as abandonment of the invention(s) embodied therein. Applicant intends to file one or more continuing applications including the claims withdrawn herein.

Applicant acknowledges the Office's acceptance of the declaration and remarks pursuant thereto regarding correction of the error in paragraph [0071] and that such correction does not constitute new matter.

Claims 24-52 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. The Office comments that the claims are indefinite as they recite a composition "for use" in making a catalyst. The Office comments further, "However, the claims actually place the composition on a carrier." (Emphasis supplied) The Office concludes that the composition would therefore appear to be an active catalyst and is being so treated for the purposes of both restriction and examination. The Office further states, "Applicant will note that this method of making the catalyst was grouped with the catalyst for purposes of restriction because a review of the specification would indicate that employing this method results in the claimed composition." (Emphasis supplied) This rejection is traversed.

Contrary to the view of the Office, claim 24, the sole independent claim of claims 24-52, recites a composition *per se* without reference to "placing" the composition on a carrier. As

can be seen from the language of claim 24 itself, a carrier is present in the composition, but there is no recitation of a method step to place any of the catalytically active metal components or the phosphorous-containing component on the carrier:

"24. (original) A composition for use in preparing a catalytically active solid, said composition comprising:

(A) water in a quantity sufficient to provide a shaped foraminous catalyst mixture;

(B) catalytically active metals useful in chemically refining hydrocarbons, said metals in the form of at least one component providing at least one metal from Group VIB of the periodic table and at least one component providing at least one metal from Group VIII of the periodic table, wherein the molar ratio of said Group VIII metal to Group VIB metal is about 0.05 to about 0.45, and wherein said Group VIII metal component is provided by a substantially water insoluble component; and

(C) at least one substantially water-soluble phosphorous-containing acidic component in an amount sufficient to provide a phosphorous to Group VIB molar ratio of about 0.05 to about 0.25; and

(D) at least one uncalcined foraminous catalyst carrier."

Although the recited composition is useful for the purposes of preparing a catalytically active solid, the claim itself recites a composition embodying several components.

Consequently, Applicant sets forth a composition comprising several components and claims such composition. It is not apparent how such a claim fails to comply with 35 U.S.C. § 112, second paragraph. Furthermore, it can be seen that the

claim language itself is directed to a composition without recitation of method steps. Consequently, the Office's reference to "this method" is misplaced. In conclusion, it is respectfully requested that this aspect of the rejection be withdrawn.

Claims 24-52 and 80-88 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. 3,287,280 to *Colgan et al.* (hereinafter "*Colgan*") or U.S. 4,500,424 to *Simpson et al.* (hereinafter "*Simpson*").

The Office states, "The instantly claimed invention involves a method for impregnating a support material with a solution of catalytically active metal components, and the composition apparently obtained by such method." As noted above, Applicant takes exception to characterization of the "instantly claimed invention" as a method, since claims 24-52 and 80-88 are directed to compositions and therefore do not "involve a method." While the methods disclosed in the instant application significantly affect the quality and nature of the catalytically active solid that can be produced by such methods, the subject claims are not directed to methods. Significantly, the disclosure of the present application states, "Although differences in the methods and compositions used to prepare such catalysts (of the present invention) may be considered small compared to those described in the art, the catalyst resulting from these changes performs significantly better in hydrocarbon conversion processes than catalysts prepared according to prior art methods." (Paragraph [0070], page 28) While Applicant acknowledges that the differences in, for example, the compositions of the present invention may appear to be small compared to those of the prior art, such differences, in fact, result in significantly improved performance of catalysts prepared using such compositions. Consequently, the significance of these compositional differences should not be

minimized, and the subject claims presently under examination reflect those compositions. The Office is asked to keep this distinction in mind when considering Applicant's response to the present Office Action.

In explaining the basis for the instant rejection in view of the cited art, the Office explains that both *Colgan* and *Simpson* disclose typical support materials and that the characteristics of the carriers "claimed by applicant" "appear no different" from those known in the art and would therefore be expected to share the same characteristics as compositions of the prior art, absent some convincing evidence to the contrary. The Office states that "pore diameter . . . is a result-effective variable and the skilled artisan would be expected to select an appropriate pore sizes (*sic*).". In this regard, the Office cites to the abstract of the *Simpson* disclosure. Furthermore, without identifying specific disclosures, the Office refers to "Additional evidence is present in other documents provided by Applicant. See, for example, U.S. 4,818,743 to Simpson et al. and U.S. 5,498,586 to Dai et al." The Office further observes that "The applied references (*Colgan* and *Simpson*) further teach Group VI metals, Group VIII metals and phosphorus in amounts overlapping those claimed herein. Accordingly, there appears little distinction between the herein claimed composition and those catalysts disclosed by *Colgan* and *Simpson*." This analysis and these observations are traversed.

To begin with, of the claims under examination, only claims 85-88 recite characteristics of the foraminous carriers, and therefore the discussion regarding this distinction between the presently claimed composition and those of *Colgan* and *Simpson* is misplaced. In particular, claims 85-88 rely not merely on catalyst pore size features, in the present case pore mode being recited, but also on compositional features as well as loss in weight on ignition and ASI ratio, the latter defined

in detail in the application. The Office states that pore diameter is merely a "result-effective variable" and that the skilled artisan would be expected to select "an appropriate" pore size. However, as indicated in *Simpson* relied on by the Office, the abstract describes the invention as specifically directed to a narrow pore size distribution having specific features in order to achieve the improvement claimed in the *Simpson* invention. Therefore, it is not correct that selection of specific characteristics of the carrier are merely within the ability of the skilled artisan but rather such selection represents features that result in new and unobvious performance, thereby qualifying as patentable subject matter.

With regard to all of the present claims under examination, the majority of which are distinguished by compositional features (claims 24-52), the Office merely states that the Group VI metals and Group VIII metals and phosphorus are present in amounts overlapping those claimed herein and that there appears to be "little distinction" between the claimed composition and the catalysts of *Colgan* and *Simpson*. However, it is respectfully noted that the claimed compositional limitations relating to the Group VIB and Group VIII metals of the present invention and the phosphorous concentration are distinguished from and do not necessarily overlap the concentrations recited in *Colgan* and *Simpson*. Additionally, Applicant employs a carrier that is different in kind since it is uncalcined. Furthermore, *Colgan* and *Simpson* are silent with regard to the achievement of controlled levels of loss in weight on ignition as well as ASI ratio in the catalyst compositions prepared therein. To the extent that a product is measured in part not only by its compositional features but by its performance characteristics and physical properties, the instant composition clearly results in a significantly different catalyst composition when the claimed composition is used to

prepare catalysts according to the process and methods disclosed herein. Proof of this distinction can be found in the examples of the application as well as in Figures 1-3 of the application. These examples and figures clearly show that the compositions of the present invention can be used to prepare active catalysts that perform significantly better than those of the prior art.

For the convenience of the Office, Applicant has prepared a table summarizing several of the distinguishing compositional features between the catalysts of the present invention and those of the cited prior art, *Colgan* and *Simpson*; this table appears below.

Comparison of Properties

Property or Component	Reference			Application			
	Simpson	Dai	Colgan	Claims	Examples		
					1	2	3
Post-impregnated Carrier	Yes	Yes	Yes	No	No	No	No
Pore Size*							
PV 70-130Å (%)	≥75	-	-	***	23.2	20.6	19.7
PV 55-115Å (%)	-	63-78	-	***	43.4	38.7	36.1
PV 60Å (%)	-	63-78	-	***	55.8	54.5	55.3
Catalyst Metals							
P/Mo (mol/mol)							
Claims	Not Specified	††	≥0.2	0.05-0.25			
Examples	0.63	0, 0.21, 0.30	0.48, 0.37, 1.21, 0.4, 1.13				

* Distribution of pore volume (PV) in recited size range

** Post-impregnation: addition of impregnating metal composition to calcined carrier (See paragraphs 29-33 of application)

*** Only claims 85-88 recite pore limitation: "pore mode is about 40 to about 90Å"

† Comparative example

†† Wt. % claimed can be 0-2.6

It can be clearly seen from the comparison of properties in the table referred to above, that the composition

of the present application and the catalyst resulting therefrom are distinguished from the references in several respects. In particular, the claims presently under examination are limited to an uncalcined carrier (component D of claim 24). Furthermore, as noted above, other features of the references differ from those of the present application. For example, in *Simpson* the catalyst carrier is limited to one having a narrow pore size distribution and additionally is not limited with regard to the ratio of P/Mo (in the single example, that ratio is 0.63, significantly greater than presently claimed). In *Colgan*, the ratio of P/Mo, while recited in the claims as being greater than or equal to 0.2, the various examples in the patent utilize significantly greater amounts of phosphorous, resulting in higher ratios of P/Mo, for example, 0.37 to 1.21. Furthermore, it is significant that the present claims are directed to a Group VIII metal component that is provided by a substantially water insoluble component (component B) and that the amount of the phosphorous-containing acidic component (component C) is at a sufficiently low concentration, such that the composition differs from the solutions of the references. The Office observes that *Simpson* defines the Group VIII carbonate component as a soluble material. However, the disclosure in *Simpson* is clearly wrong. For example, the Merck Index discloses that nickel carbonate hydroxide is insoluble in water, and cobaltous carbonate is described as practically insoluble in water (copies enclosed). Reaction of either of these carbonates with phosphoric acid leads to the formation of a phosphate which is similarly insoluble in water. A substantial excess of phosphoric acid would be required to dissolve the salt completely. Whereas such excess of acid may be present in one or more of the references, the present application utilizes significantly lower levels of phosphoric

acid, such that the salt remains insoluble, at least during the initial preparation of the claimed composition.

The Office dismisses the significance of the distinctions between the presently claimed composition and those of the references without taking into account the resulting significantly improved performance of the catalyst produced by such composition. This difference is highlighted by the examples and the figures disclosed in the application as filed. In contrast, the Office comments that there appears to be "little distinction" between the claimed composition and those disclosed by *Colgan* and *Simpson*. Furthermore, the Office also comments that "any impregnant would have been obvious in the process, however, because the significance of selection cannot be determined." The Office further comments that the "solubility of the substance in water is really not relevant as long as it is soluble or can be dispersed to some degree in the final impregnant solution." It is concluded by the Office that "Such limitation would not appear to lend patentable moment to the process under examination." (See page 5 of the Office Action) As noted at the beginning of the Remarks, while the differences between the claims and disclosure of the present invention may appear to be small in comparison to that of the prior art, the combination of features presently claimed results in a significant improvement in performance of the resulting catalyst. This is clearly illustrated in the examples and figures provided and supports the patentability of the claimed composition. Withdrawal of this aspect of the rejection is respectfully requested.

As it is believed that all of the rejections set forth in the Official Action have been fully met, favorable reconsideration and allowance are earnestly solicited.

If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is

Application No.: 10/719,551

Docket No.: W9652-01

respectfully requested that she telephone Applicant's attorney at (908) 654-5000 in order to overcome any additional objections which she might have.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

Dated: September 6, 2005

Respectfully submitted,

By 

Harvey L. Cohen

Registration No.: 28,365

LERNER, DAVID, LITTENBERG,

KRUMHOLZ & MENTLIK, LLP

600 South Avenue West

Westfield, New Jersey 07090

(908) 654-5000

Attorney for Applicant

LD-447\